

Figure 1A

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Nucleic Acid sequence human histamine H3 receptor (full sequence including untranslated regions) [SEQ.ID.NO.:5]

CCACGCGTCCGCCGGCTGCACGGTCGCACCGGCAGCGGCTCAGGCTCCGG
CTCCTCTCCCGCTGCAGCAGCCGCGCTGCCGGCCCCACTGGGCTCGGATC
CGGCCCCGGCCCCCTCGGCACCGCCTGCTCTGGCCCCGGCCCCGGCCCCG
CGGACCATGCGCTGGGCGCCCCCAGGGGAAACCCGACCCGGCCAAGGGCC
CGAAAGACGAGGCTCCCGGGCCGGGGGCCCTCCCGGCCGCCAGCTCTC
GGCCGGCGCCCTGCCCGCGTCCCGGAGCCGCGTGAGCCTGCGGGGCCAT
GGAGCGCGCGCCGCCGACGGGCCGCTGAACGCTTCGGGGGCGCTGGCGG
GCGATGCGGCGGCGGGCGGGCGGGGCGCGCGGCTTCTCGGCAGCCTGGACC
GCGGTGCTGGCCGCGCTCATGGCGCTGCTCATCGTGGCCACGGTGCTGGG
CAACGCGCTGGTCATGCTCGCCTTCGTGGCCGACTCGAGCCTCCGCACCC
AGAACAACCTCTTCCTGCTCAACCTCGCCATCTCCGACTTCCTCGTCGGC
GCCTTCTGCATCCCACTGTATGTACCCTACGTGCTGACAGGCCGCTGGAC
CTTCGGCCGGGGCCTCTGCAAGCTGTGGCTGGTAGTGGACTACCTGCTGT
GCACCTCCTCTGCCTTCAACATCGTGCTCATCAGCTACGACCGCTTCCTG
TCGGTCACCCGAGCGGTCTCATACCGGGCCAGCAGGGTGACACGCGGCG
GGCAGTGCGGAAGATGCTGCTGGTGTGGGTGCTGGCCTTCCTGCTGTACG
GACCAGCCATCCTGAGCTGGGAGTACCTGTCCGGGGGCAGCTCCATCCCC
GAGGGCCACTGCTATGCCGAGTTCTTCTACAACTGGTACTTCCTCATCAC
GGTTCCACCCTGGAGTTCTTTACGCCCTTCCTCAGCGTCACCTTCTTA
ACCTCAGCATCTACCTGAACATCCAGAGGCGCACCCGCTCCGGCTGGAT
GGGGCTCGAGAGGCAGCCGGCCCCGAGCCCCCTCCCGAGGCCAGCCCTC
ACCACCCCAACCGCTGGCTGCTGGGGCTGCTGGCAGAAGGGGGCACGGGG
AGGCCATGCCGCTGCACAGGTATGGGGTGGGTGAGGCGGCCGTAGGCGCT
GAGGCCGGGGAGGCGACCCTCGGGGGTGGCGGTGGGGGCGGCTCCGTGGC
TTCACCCACCTCCAGCTCCGGCAGCTCCTCGAGGGGCACTGAGAGGCCGC
GCTCACTCAAGAGGGGCTCCAAGCCGTCGGCGTCCTCGGCCTCGCTGGAG
AAGCGCATGAAGATGGTGTCCCAGAGCTTACCCAGCGCTTTCGGCTGTC
TCGGGACAGGAAAGTGCCAAAGTCGCTGGCCGTCATCGTGAGCATCTTTG
GGCTCTGCTGGGCCCCATACAGCTGCTGATGATCATCCGGGCCGCTGC
CATGGCCACTGCGTCCCTGACTACTGGTACGAAACCTCCTTCTGGCTCCT
GTGGGCCAACTCGGCTGTCAACCCTGTCCTCTACCCTCTGTGCCACCACA
GCTTCGGCCGGGCCCTTACCAAGCTGCTCTGCCCCAGAAGCTCAAAATC
CAGCCCCACAGCTCCCTGGAGCACTGCTGGAAGTGAGTGGCCCACCAGAG
CCTCCCTCAGCCACGCCTCTCTCAGCCCAGGTCTCCTGGGCATCTGGCCC
TGCTGCCCCCTACCCGGCTCGTTCCCCCAGGGGTGAGCCCCGCGGTGTCT

Figure 1B

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GTGGCCCTCTCTTAATGCCACGGCAGCCACCCTGCCATGGAGGCGCCTTC
CTGGGTGGCCAGAGGGCCCCCTCACTGGCTGGACTGGAGGCTGGGTGGCC
GGCCCTGCCCCCACATTCTGGCTCCACCGGGGAGGGACAGTCTGGAGGT
CCCAGACATGCTGCCACCCCCTGCTGGTGCCACCCTTCGCAGTTA CTG
GTTGGTGTTCTTCCCAAAGCAAGCACCTGGGTGTGCTCCAGGCTTCCTGC
CCTAGCAGTTTGCCTCTGCACGTGCACACACCTGCACACCCCTGCACACA
CCTGCACACCGTCCCTCTCCCCGGACAAGCCCAGGACACTGCCTTTGCTG
CCTTCTGTCTCTTGATAAGCCTCAGGCCTGGCCCTTTCACCCCTCTTCC
CACCAACTCTCTCTGCCCCAAAAGTGTCAAGGGGCCCTAGGAACCTCGA
AGCTGTTCTCTGCTTTTCCATTCTGGGTGTTTTTCAGAAAGATGAAGAAGA
AAACATGTCTGTGAACCTTGATGTTTCGTGGGATGTTTAATCAAGAGAGACA
AAATTGCTGAGGAGCTCAGGGCTGGATTGGCAGGTGTGGGCTCCACGCC
CTCCTCCCTCCGCTAAGGCTTCCGGCTGAGCTGTGCCAGCTGCTTCTGCC
CACCCCGCCTCTGGGCTCACACCAGCCCTGGTGGCCAAGCCTGCCCCGGC
CACTCTGTTTGCTCACCCAGGACCTCTGGGGGTTGTTGGGAGGAGGGGGC
CCGGCTGGGCCCCGAGGGTCCCAAGGCGTGCAGGGGCGGTCCAGAGGAGGT
GCCCCGGCAGGGGCCGCTTCGCCATGTGCTGTGCACCCGTGCCACGCGCT
CTGCATGCTCCTCTGCCTGTGCCCGCTGCGCTGCCCTGCAAACCGTGAGG
TCACAATAAAGTGATTTTTTTAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

Figure 2

Nucleic acid sequence human histamine H3 receptor (coding region) [SEQ ID NO:6]

ATGGAGCGCGCGCCGCCCCGACGGGCGCTGAACGCTTCGGGGGCGCTGGCGGGCGATGC
GGCGGGCGGGCGGGGCGCGGGCTTCTCGGCAGCCTGGACCGCGGTGCTGGCCGCGCT
CATGGCGCTGCTCATCGTGGCCACGGTGCTGGGCAACGCGCTGGTCATGCTCGCCTTCGTG
GCCGACTCGAGCCTCCGCACCCAGAACAACTTCTTCCTGCTCAACCTCGCCATCTCCGACT
TCCTCGTCGGCGCCTTCTGCATCCCACTGTATGTACCCTACGTGCTGACAGGCCGCTGGAC
CTTCGGCCGGGGCCTCTGCAAGCTGTGGCTGGTAGTGGACTACCTGCTGTGCACCTCCTCT
GCCTTCAACATCGTGCTCATCAGCTACGACCGCTTCCTGTCGGTCACCCGAGCGGTCTCAT
ACCGGGCCAGCAGGGTGACACGCGGGCGGGCAGTGCGGAAGATGCTGCTGGTGTGGGTG
CTGGCCTTCCTGCTGTACGGACCAGCCATCCTGAGCTGGGAGTACCTGTCCGGGGGAGCT
CCATCCCCGAGGGCCACTGCTATGCCGAGTTCTTCTACAACTGGTACTTCCTCATCACGGC
TTCCACCCTGGAGTTCTTTACGCCCTTCCTCAGCGTCACCTTCTTTAACCTCAGCATCTACC
TGAACATCCAGAGGCGCACCCGCTCCGGCTGGATGGGGCTCGAGAGGCGAGCCGGCCCCG
AGCCCCCTCCCGAGGCCAGCCCTACCAACCCACCGCCTGGCTGCTGGGGCTGCTGGC
AGAAGGGGCACGGGGAGGCCATGCCGCTGCACAGGTATGGGGTGGGTGAGGCGGCCGTA
GGCGCTGAGGCCGGGGAGGCGACCCCTCGGGGGTGGCGGTGGGGGCGGCTCCGTGGCTTC
ACCCACCTCCAGCTCCGGCAGCTCCTCGAGGGGCACTGAGAGGCCGCGCTCACTCAAGAG
GGGCTCCAAGCCGTCGGCGTCCTCGGCCTCGCTGGAGAAGCGCATGAAGATGGTGTCCCA
GAGCTTCACCCAGCGCTTTCGGCTGTCTCGGGACAGGAAAGTGGCCAAGTCGCTGGCCGT
CATCGTGAGCATCTTTGGGCTCTGCTGGGCCCCATACAGCTGCTGATGATCATCCGGGCC
GCCTGCCATGGCCACTGCGTCCCTGACTACTGGTACGAAACCTCCTTCTGGCTCCTGTGGG
CCAACTCGGCTGTCAACCCTGTCCTCTACCCTCTGTGCCACCACAGCTTCCGCCGGGCCTT
CACCAAGCTGCTCTGCCCCCAGAAGCTCAAAATCCAGCCCCACAGCTCCCTGGAGCACTG
CTGGAAG

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Figure 3

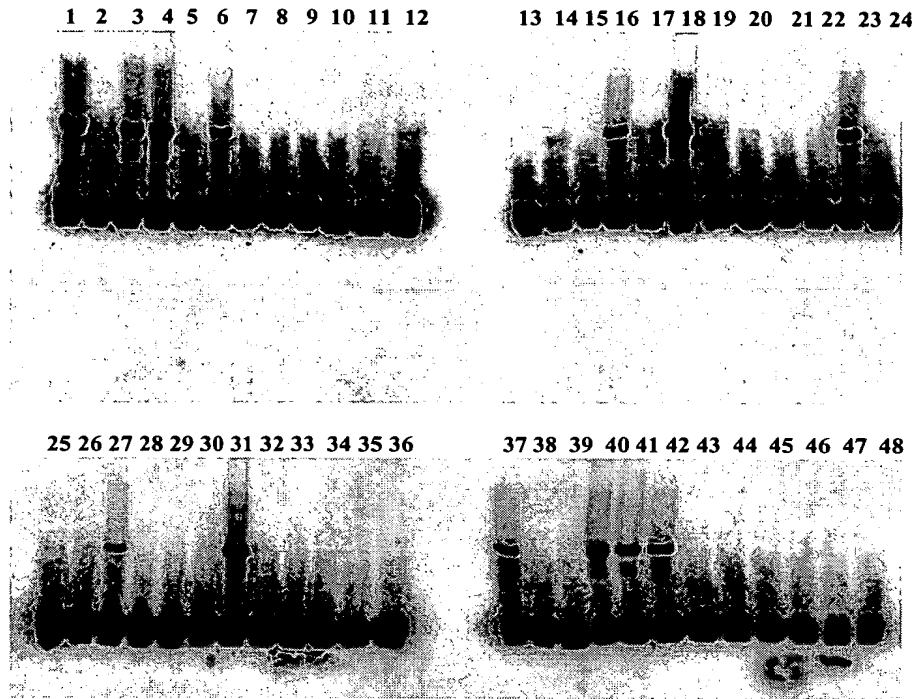
Amino acid sequence human histamine H3 receptor [SEQ.ID.NO.:7]

Met Glu Arg Ala Pro Pro Asp Gly Pro Leu Asn Ala Ser Gly Ala Leu Ala Gly
Asp Ala Ala Ala Ala Gly Gly Ala Arg Gly Phe Ser Ala Ala Trp Thr Ala Val
Leu Ala Ala Leu Met Ala Leu Leu Ile Val Ala Thr Val Leu Gly Asn Ala Leu
Val Met Leu Ala Phe Val Ala Asp Ser Ser Leu Arg Thr Gln Asn Asn Phe Phe
Leu Leu Asn Leu Ala Ile Ser Asp Phe Leu Val Gly Ala Phe Cys Ile Pro Leu
Tyr Val Pro Tyr Val Leu Thr Gly Arg Trp Thr Phe Gly Arg Gly Leu Cys Lys
Leu Trp Leu Val Val Asp Tyr Leu Leu Cys Thr Ser Ser Ala Phe Asn Ile Val
Leu Ile Ser Tyr Asp Arg Phe Leu Ser Val Thr Arg Ala Val Ser Tyr Arg Ala
Gln Gln Gly Asp Thr Arg Arg Ala Val Arg Lys Met Leu Leu Val Trp Val Leu
Ala Phe Leu Leu Tyr Gly Pro Ala Ile Leu Ser Trp Glu Tyr Leu Ser Gly Gly
Ser Ser Ile Pro Glu Gly His Cys Tyr Ala Glu Phe Phe Tyr Asn Trp Tyr Phe
Leu Ile Thr Ala Ser Thr Leu Glu Phe Phe Thr Pro Phe Leu Ser Val Thr Phe
Phe Asn Leu Ser Ile Tyr Leu Asn Ile Gln Arg Arg Thr Arg Leu Arg Leu Asp
Gly Ala Arg Glu Ala Ala Gly Pro Glu Pro Pro Pro Glu Ala Gln Pro Ser Pro
Pro Pro Pro Gly Cys Trp Gly Cys Trp Gln Lys Gly His Gly Glu Ala Met
Pro Leu His Arg Tyr Gly Val Gly Glu Ala Ala Val Gly Ala Glu Ala Gly Glu
Ala Thr Leu Gly Gly Gly Gly Gly Gly Gly Ser Val Ala Ser Pro Thr Ser Ser
Ser Gly Ser Ser Ser Arg Gly Thr Glu Arg Pro Arg Ser Leu Lys Arg Gly Ser
Lys Pro Ser Ala Ser Ser Ala Ser Leu Glu Lys Arg Met Lys Met Val Ser Gln
Ser Phe Thr Gln Arg Phe Arg Leu Ser Arg Asp Arg Lys Val Ala Lys Ser Leu
Ala Val Ile Val Ser Ile Phe Gly Leu Cys Trp Ala Pro Tyr Thr Leu Leu Met
Ile Ile Arg Ala Ala Cys His Gly His Cys Val Pro Asp Tyr Trp Tyr Glu Thr
Ser Phe Trp Leu Leu Trp Ala Asn Ser Ala Val Asn Pro Val Leu Tyr Pro Leu
Cys His His Ser Phe Arg Arg Ala Phe Thr Lys Leu Leu Cys Pro Gln Lys Leu
Lys Ile Gln Pro His Ser Ser Leu Glu His Cys Trp Lys

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Figure 4

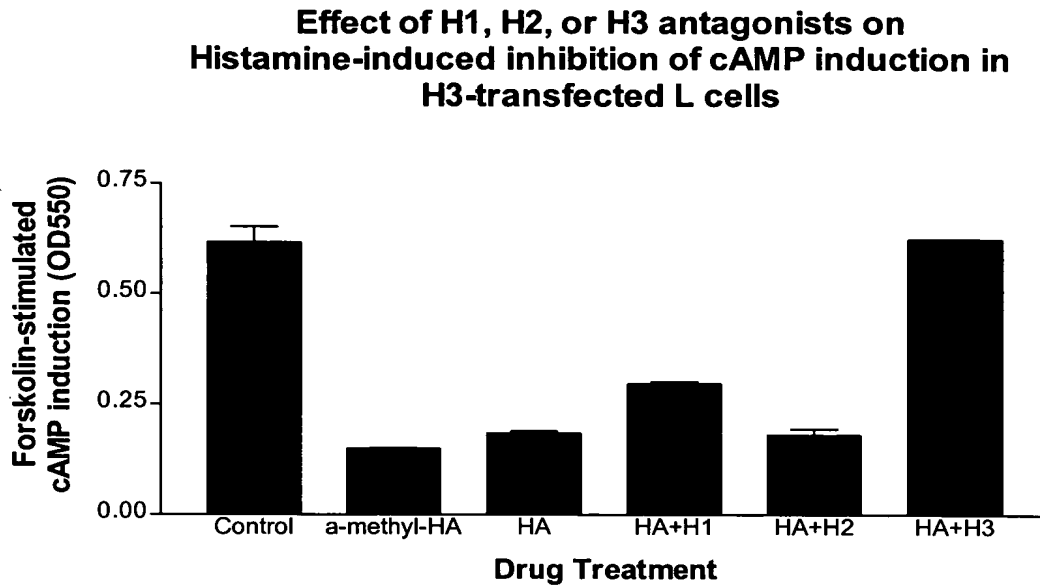
PCR-based distribution of human histamine H3 receptor



1, Amygdala; 2, Bone Marrow; 3, Brain; 4, Cerebellum; 5, Heart; 6, Hippocampus; 7, Kidney; 8, Liver; 9, Lung; 10, Pancreas; 11, Placenta; 12, Prostate; 13, Skeletal Muscle; 14, Small Intestine; 15, Spleen; 16, Spinal Cord; 17, Stomach; 18, Thalamus; 19, Testis; 20, Thymus; 21, Uterus; 22, Adrenal Gland; 23, Caudate Nucleus; 24, Lymph Node; 25, Mammary Gland; 26, Salivary Gland; 27, Substantia Nigra; 28, Thyroid; 29, Trachea; 30, Spleen; 31, Thalamus; 32, Placenta; 33, Heart; 34, Liver; 35, Lung; 36, Uterus; 37, Pituitary; 38, Spinal cord; 39, Bone Marrow; 40, Hippocampus; 41, Dorsal Root Ganglia; 42, Small Intestine; 43, Negative Control; 44, Negative Control; 45, Negative Control; 46, Negative Control; 47, Negative Control; 48, Negative Control.

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Figure 5



a-methyl-HA = H3 agonist alpha-methyl-histamine (1uM)
HA = Histamine (1uM)
H1 antagonist = diphenhydramine (10uM)
H2 antagonist = ranitidine (10uM)
H3 antagonist = thioperamide (10uM)

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Figure 6: Sequence of pH3R probe [SEQ.ID.NO.:8]

ACTGGTACGAAACCTCCTTCTGGCTCCTGTGGGCCAACTCGGCTGTCAACC
CTGTCCTCTACCCTCTGTGCCACCACAGCTTCCGCCGGGCCTTCACCAAGC
TGCTCTGCCCCCAGAAGCTCAAAATCCAGCCCCACAGCTCCCTGGAGCAC
TGCTGGAAGTGAGTGGCCCACCAGAGCCTCCCTCAGCCACGCCTCTCTCA
GCCCAGGTCTCCTGGGCATCTGGCCCTGCTGCCCCCTACCCGGCTCGTTCC
CCCAGGGGTGAGCCCCGCCGTGTCTGTGGCCCTCTCTTAATGCCACGGCA
GCCACCCTGCCATGGAGGCGCCTTCCTGGGTTGGCCAGAGGGCCCCTCAC
TGGCTGGACTGGAGGCTGGGTG

FIGURE 7A

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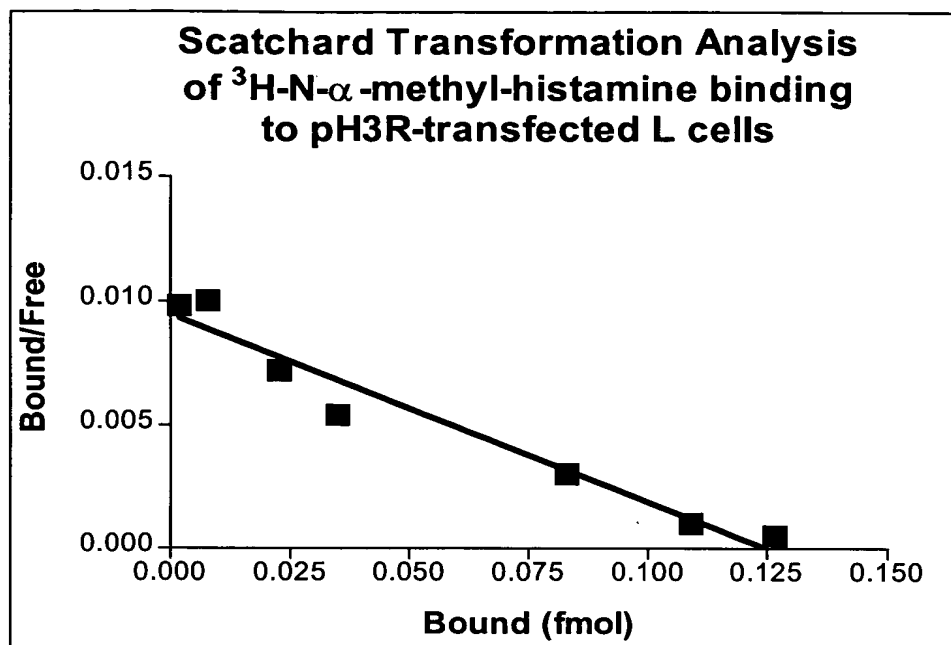


FIGURE 7B

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